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# Decoding of children's nonverbal facial expressions of emotion by parents and nonparents.

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# DECODING OF CHILDREN'S NONVERBAL FACIAL EXPRESSIONS OF EMOTION BY PARENTS AND NONPARENTS

A Dissertation Presented

By

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FACIAL EXPRESSIONS OF EMOTION
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## DEDICATION

This work is dedicated to the two people who have inspired, motivated, sustained, and instigated my efforts, at times giving and encouraging, and at other times pushing and persisting, but always, in the end, faithful to our love and our life together.

To Marcia, for her courage and her love. To Joshua, for his energy and his trust.

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ABSTRACT

Decoding of Children's Nonverbal Facial Expressions of Emotion by Parents and Nonparents

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Parents' abilities to decode their children's nonverbal expressions of four affects (happiness, sadness, fear, and anger) were contrasted with the decoding abilities of a matched group of nonparents. No differences were found between parents' and nonparents' decoding abilities. However, decoding abilities were found to vary as a function of the sex of the encoding child and, the type of affect expressed. Female children were found to be more accurate encoders of spontaneous affective expressions than male children. Of the four affects studied, communication accuracy was found to be highest for expressions of sadness and lowest for expressions of anger. Several hypotheses, including the differential effect of socialized display rules on male and female children, are discussed to explain the results.

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# CHAPTER I

## INTRODUCTION

Affective states have been found to influence a variety of behavior patterns related to the acquisition of social and cognitive skills and personality factors in young children. The development of altruism (Moore, Underwood, and Rosenhan, 1973), aggression (Harris and Siebel, 1975), and rates of mastery of several learning tasks (Masters, Barden, and Ford, 1979) have been shown to be influenced by affective states.

Valuable information about an individual's internal, affective state can be obtained by observations of nonverbal behavior. Ekman and Friesen (1969) have shown that adults without training can, and do, make accurate inferences about emotions by observing nonverbal behavior. Especially for younger children, whose verbal abilities are not yet greatly developed, nonverbal behavior may even be the primary means of communicating about their internal, emotional state (Odom and Lemond, 1972). This may be particularly true for negative or unpleasant affects which seem to be subject to greater inhibition of verbal expression due to socialization in our culture (Mehrabian, 1972).

Because of the utility of nonverbal behavior in providing information about children's emotional experiences,

an investigation of the ability of parents to understand children's nonverbal communication of emotion represents an important area of research in child development. Parents' accurate decoding of children's nonverbal expressions of affect can enable them to help their children in interpreting, labeling, and differentiating their emotional experiences, the emotional expressions of others, and the stimuli that elicit them. Sensitivity to the nonverbal expressions of children may affect the outcome of specific interactions between parent and child, as well as the ongoing character of the parent-child relationship, by providing the parent with a better understanding of the child's behaviors and the emotional states that play a part in motivating them. Most importantly, recognition of the child's emotional state provides a basis for the empathic understanding of the child. Since parental empathy is an important factor in promoting a sense of well-being and health in children (Carek, 1972; Ornstein, 1976; and Saarni, 1978), the ability to decode accurately nonverbal expressions of affect seems to be a critically important, yet relatively little researched, parenting skill.

Some research has shown, indeed, how important such decoding skills are. For instance, the nonverbal decoding skills of mothers have been found to be related to school adjustment in young preschool children (Zuckerman and

Przewuzman, 1979). Significant relationships between children's cognitive abilities, teachers' impressions of children's cognitive abilities, and children's sensitivities to nonverbal expressions of affect have also been found (Halberstadt and Hall, 1980). Because the sensitivity of children to nonverbal expressions might reasonably be expected to depend in part on their parents' skill in this area (Daly, Abromavitch, and Pliner, 1980), then it also seems that nonverbal skills of parents impact on children's adjustment and ability.

Although some prior research has focussed on various aspects of the nonverbal communication process between parents and children, relatively little is known regarding the ability of parents to decode specific expressions of emotion. The present study will address this question by examining how mothers and fathers differ from each other and from other adults in their ability to decode expressions of specific affects in male and female children.

The literature relevant to the nonverbal communication process between parents and children can be roughly grouped into studies of the encoding skills of children, studies of the skill of adults in decoding children's nonverbal behavior, and studies attempting to examine the various relationships between parents and children in encoding and decoding emotional expressions.

## Children's Encoding

The developmental pattern of encoding ability. Even young infants have, within their repertoire of communication skills, the ability to encode recognizable expressions of affect. Izard, Huebner, Risser, McGuiness, and Dougherty (1980) studied one to nine month old infants and found that college students, without prior training, could identify accurately nonverbal expressions of interest, joy, surprise, sadness, anger, disgust, contempt, and fear. Training increased the accuracy with which these expressions could be recognized.

Other studies have examined the social signaling aspect of emotional expression (Emde, Kligman, Reich, and Wade, 1978), the ethological study of mother-infant interaction systems (Tronick and Adamson, 1979), and the influence of the caregiver and social world in supplying the basis for cognitive evaluation of emotional experience and differentiation of self from others (Lewis, Brooks, and Haviland, 1978). These studies suggest that the response of the caregiver to the infant's nonverbal expressive signals provides a framework for understanding the importance of these signals as socially useful and meaningful. The accurate decoding of the infant's behavior for cues as to how to respond appropriately is seen as especially critical in this reciprocal feedback system (Saarni, 1978).

In studying preschool and grade school children, Mayo and LaFrance (1978) reviewed the literature on the acquisition of nonverbal communication skills. They reported developmental differences in the ability to encode different affective expressions. Happy and sad expressions were produced accurately by all age groups studied. The ability to produce expressions of anger and surprise showed developmental improvement up to the age of ten or eleven. Expressions of fear, however, were not found to be accurately produced in a reliable fashion even by the older children reported on in the review (third and fifth graders). Mayo and LaFrance also note that although developmental improvement in producing accurate facial expressions is found in some studies, others (notably, Odom and Lemond, 1972) show no great improvement beyond nursery school age. However, in one of the few studies of the production of nonverbal expressions of emotion employing a spontaneous encoding paradigm, Morency and Krauss (1982) did find that older children (fifth graders) were more accurate encoders than younger children (first graders). They also found the same difference in ability between the age groups when a role-playing encoding paradigm was employed (although both age groups did better when role-playing was employed).

Encoding of specific affects by children. In studying the

encoding aspect of the nonverbal communication of affect by children, researchers have examined the kinds of messages young children are capable of encoding as well as the developmental trends in the emergence of these capacities.

Several researchers have focussed on the encoding of specific affects by young children. Most employed a role-playing paradigm in which children are asked to show how they would look if they were happy, sad, angry, surprised, and/or afraid. Odom and Lemond (1972) found that the less accurately produced expressions were, for the most part, those judged less socially desirable. (The sole exception was anger, which was produced accurately with moderate reliability.) Buck (1975) found that preschool children seemed to be significantly more accurate in producing expressions of happiness than in producing afraid and angry expressions.

Taken together, the findings on the ability to encode specific affects and the developmental trends in encoding suggest several hypotheses about the encoding aspect of nonverbal communication in young children. For the most part, the research seems to suggest that a general ability to accurately encode affect increases with age. However, this is modified by the type of affect studied. Happy and sad seem to be within the ability of preschoolers as well as older children. The affects which may be seen as more

socially undesirable are least accurately produced by preschoolers, with some developmental improvement noted (except for fear). This seems to suggest the possibility that the nonverbal encoding of specific affects may be differentially inhibited as part of the process of socialization. If this were the case, we might expect adults to have relative difficulty in decoding particular affects, again suggesting this as an issue to be studied further.

Alternatively, it should be noted that much of these data on encoding were gathered with children role-playing the affects involved. This may imply that the decreased encoding accuracy for "socially undesirable" affects may be partially due to a decreased ability to comprehend and produce the rather complex facial movements necessary to express emotion under role-played conditions. Although Zuckerman and Przewuzman (1979) have reported positive correlations between encoding of posed and spontaneous cues, it is still possible that young children might be unable to produce (role-play) facial expressions of more socially undesirable affects, but nonetheless be able to spontaneously encode such affects. A spontaneous encoding paradigm might, therefore, still elicit those expressions which have been in the repetoire of children since infancy (as noted by Izard et al. above).

Sex differences in encoding. Just as there is some ambiguity in the findings with regard to developmental differences in the ability to encode various facial expressions of emotion, a similar ambiguity is found with regard to sex differences in encoding. Buck (1975, 1977), employing a spontaneous encoding paradigm, found a trend toward increasing accuracy for girls with age but a tendency toward decreased accuracy of encoding for boys as age increased. One problem with these studies is that the encoding task employed stimuli that were not specific to particular affects but rather involved a more general pleasant-unpleasant dimension of affective communication. It is possible that this general dimension masks more specific sex differences. Zuckerman and Przewuzman (1979) found a similar pattern of increased encoding ability for girls as age increased while boys' ability seemed to decrease slightly with age. However, their encoding task involved a role-playing paradigm. Morency and Krauss (1982) found no significant sex differences at all. Buck's hypothesis that sex differences in encoding nonverbal expressions develop as a result of differential socialization practices may still be tenable but further investigation of this question seems merited.

## Decoding Children's Nonverbal Behavior

Decoding and empathic ability. Whereas the ability of adults to recognize a child's feelings as expressed nonverbally is certainly important as a basis for empathic behavior, empathic responding to children also depends on the adult's decoding of how he or she is being evaluated by the child. The infant research generally emphasizes the importance of parental (usually maternal) decoding of behavior and the reciprocal nature of the interaction between infant and caregiver. Several studies have found that adult responding to children (older than infants), and empathic ability in particular, is indeed influenced by the adult's perception of the affective responses of the child to the adult. Cantor, Wood, and Gelfand (1977) and Teyber, Messe, and Stollak (1977) have shown that adults often reciprocate the perceived affective content of the child's message to the adult. Rather than take the role of the child in understanding the situation, adults simply matched the perceived affect of the child. Bates (1976) also found evidence of affect matching between adult and child. In addition, however, children who served as confederates in the study (encoding various degrees of positivity toward adults) were themselves affected by the adults' responses to their nonverbal behavior in the direction of the experimental manipu-

lation such that children role-playing high degrees of nonverbal cues of positivity toward adult subjects actually felt more positively about the adult subjects; and the reverse was also true. Apparently, attempts at empathic responding, at understanding the child's point of view, were inhibited. However, these studies did not include parents and their own children, and therefore, the adults in the studies might presumably be less motivated to try to understand the child. Parents might obviously be more motivated to try to understand the basis for the child's affective behavior by placing themselves in their children's position and taking their perspective. The studies cited above may also have been limited in that they did not call for adult decoders to make judgments about, nor interpretations of, the child's specific affective state (subjects instead were asked to respond more generally in terms of liking or not liking the child). Since empathic responding involves the experiencing of emotion similar to that of another person as a consequence of perceiving feeling in the other person (Feshbach and Roe, 1968, emphasis added), situations calling for adults to make specific judgments about what a child feels might better elicit empathic responding. The relative ability of adults, particularly parents, to decode accurately nonverbal expressions of specific affects has not been adequately examined in most prior studies.

Decoding abilities of parents. There have been relatively few studies examining parents' decoding abilities of specific, rather than global, affective expressions in young children. Since decoding ability may vary with the subtlety of the encoding condition, it would be important to be able to study decoding when the affective expressions are encoded under both role-played and spontaneous conditions. Yet the requirement that spontaneous encoding conditions be employed limits the number of studies to be reviewed even further. As a final condition, if we want to be able to draw conclusions about parents' abilities in decoding their children's affects, studies would have to include both mothers and fathers. Surprisingly there is not one reported study that meets all of these requirements. The studies reported below, though incomplete according to these requirements, do suggest several hypotheses to be tested in the present research.

Because parents have a greater history of interaction with their own children compared to other adults, social skills theory (Argyle and Kendon, 1967) and learning theory (Staats, 1975) would predict that parents compared to other adults should achieve greater accuracy in decoding their own children's expressions. Yet there have been few studies seeking to confirm this prediction. Hall, Rosenthal, Archer, DiMatteo, and Rogers (1977) employed the Profile

of Nonverbal Sensitivity (PONS) to test the hypothesis that experience with preverbal children would lead to a general increased sensitivity to nonverbal cues. In fact, compared to a matched sample of nonparents, their hypothesis was confirmed in that parents of toddlers achieved greater accuracy on this instrument. However, the PONS employed an adult female as the encoder of nonverbal messages. Generalizing about parents' and nonparents' abilities to decode children's expressions is, therefore, not possible.

Zuckerman and Przewuzman (1979) found that parents were better able to decode their own children than unrelated children but employed no adult control group for the parents. Again, their encoding condition involved only role-playing.

Buck (1975, 1977) developed a slide-viewing paradigm that elicited spontaneous encoding of generalized affective expressions in preschool children in order to study communication accuracy between parents and their children. Children were shown four types of "emotionally-loaded" slides (slides of familiar and unfamiliar people, mildly unpleasant slides, and slides of strange photographic effects) while mothers were asked to view simultaneously the children's facial expressions on closed-circuit television. The mothers attempted to guess the type of slide the child was viewing each time the child's face

was shown on their monitor. This provided a categorization measure of communication accuracy: a percentage of correct judgments of type of slide shown to the child. In addition, for each slide shown, the children indicated the degree of pleasantness-unpleasantness they experienced by indicating their general affective response to the slide on a happy-sad face scale. Mothers also made judgments about the child's general affective state by rating the experience of the child on a similar pleasantness scale. The correlated ratings of mothers and children thus produced a pleasantness measure of communication accuracy. Later, a group of college students was shown the videotapes of the children and made ratings similar to the mothers.

Buck found that significant communication accuracy on both measures occurred with mothers as well as college students but no direct comparisons between these groups was reported (presumably because the investigator was more interested in encoding behavior and not mothers' decoding). Although a role-playing task was also employed to study the encoding of specific affects (reported above), the findings with regard to decoding apply only to spontaneously elicited more global expressions of affect (i.e., pleasantness-unpleasantness). Fathers' decoding was not studied.

Morency and Krauss (1982) employed a design similar to

Buck's in studying decoding of affect with both spontaneous and role-played encoding conditions. The slide-viewing paradigm in the spontaneous encoding condition was identical to Buck's. In the role-played encoding condition, children were asked to role-play five situations keyed to specific affects. Both fathers and mothers were employed as decoders. In addition, parents rated their own children as well as the other children in the study so that a comparison between parents' performance with their own children versus other, unrelated parents was possible.

Decoding accuracy was found to be minimal when affect was encoded spontaneously. Surprisingly, parents were no better at decoding their own children than were other, randomly selected parents. The expected differences between parents and nonparents emerged only when role-playing was employed to encode affect; parents were then better decoders of their own children than were other unrelated adults. No differences in accuracy between fathers and mothers was found.

Although this study goes further than Buck's in comparing parents' abilities in decoding, no attempt was made to study more specific affective communication in a spontaneous encoding condition. In addition, the measure employed for the spontaneous encoding task was limited to correlated ratings of child and parent responses on the global pleasantness dimension. It is possible that a

categorization-type measure would have produced different results. In the role-played encoding condition, five situations eliciting five specific affects were employed but the data for decoding were not reported by type of affect. Possible differences in decoding by type of affect between parents and nonparents may be obscured. Further, Morency and Krauss caution that their age range for child subjects was restricted to less than one year and that their sample size was small.

In order to extend the previous research, Feinman and Feldman (1982) employed a slide-viewing paradigm in a spontaneous encoding condition similar to those reported above but specific to four affects: happiness, sadness, anger, and fear. (The Feinman and Feldman report was based upon a Master's thesis submitted by Feinman, 1980.) The child encoders, four to six year old preschoolers, divided evenly by sex, watched a series of slides and heard corresponding stories about children in situations eliciting the four affects being studied. The slides and stories were originally developed by Feshbach and Roe (1968) as an empathy measure. Mothers of the children viewing the children's nonverbal expressions on television monitors, were asked to attempt to categorize correctly the type of affect-inducing situation for each time the child appeared on the screen. A role-playing

condition for each of the four affects was also created. Mothers' performance in both encoding conditions was compared to the performance of a matched sample of women (who were not parents) viewing the videotapes of the children at a later date.

It was hypothesized that mothers' performance would be superior to that of the nonmothers based on their greater histories with their own children. It was also expected that female encoders would be decoded more accurately than males and that positive affect (happiness) would be decoded more accurately than the other affects studied.

Results were somewhat surprising. As a group, and without regard to the pattern of decoding accuracy of specific affects, mothers' performance in decoding the spontaneously elicited expressions of children's affect was no better than that of the matched sample of nonmothers. However, when the pattern of accuracy with regard to specific affects was studied, differences between the two groups did emerge. Mothers were better at decoding expressions of happiness in their own children and worse than the nonmothers in decoding expressions of anger (no differences were found for sadness and fear). Again, for the spontaneous encoding situation, when sex of encoder was examined moderated by type of affect, a similar

pattern appeared. Male encoders were decoded at significant levels only for the affect happiness. Again rather surprising, female encoders were decoded at no better than chance levels for any affect. In fact, for the affect anger, they were actually decoded at levels far worse than would be expected by chance alone. (Sadness and fear were decoded at no better than chance levels.)

Taken together, these findings were interpreted as providing additional evidence that socialization processes do inhibit the expression of negative affect in young children, particularly anger, and more particularly for young girls. Mothers' performance was interpreted as representative of the possibility that parental defenses are somehow invoked which would initially inhibit the accurate decoding of expressions of negative affect (anger) that might threaten the sense of parent-child well-being. Obviously, were this to be the case, empathic responding to situations in which children (perhaps especially female children) were angry would be inhibited as well.

Several areas of improvement were suggested for future research. First, the authors noted that the affect induction, although apparently quite effective, might be varied so as to provide further confidence about the induction of affect to be decoded. Second, only mothers' decoding was studied. It was, therefore, suggested that

fathers' abilities be tested in order to be able to generalize about parents.

Parents' decoding: studies of fathers' and mothers' abilities. There is now much evidence suggesting the importance of both fathers and mothers in the emotional and cognitive development of children. Psychoanalytic research suggests the importance of the father early on in helping to bring the infant into the "social world" (Mahler, Pine, and Bergman, 1975) and in helping to form the child's basic character structure (Brody and Axelrod, 1978). Review of the research on security, sex roles, and competence in children suggests the importance of the father's approach (as well as the mother's) to interacting with the child (Lynne, 1974). For young children, adjustment to nursery school has been found to be related to the nature of parental differences as well as to the characteristics of the father-child relationship (Bloom-Feshbach, Bloom-Feshbach, and Gaughran, 1980).

Given the importance of both parents in child development, very few studies have attempted to account for the relative abilities of fathers and mothers in the decoding of nonverbal expressions of affect. Generally, adult females are found to be consistently better at decoding nonverbal expressions compared to males (Hall, 1978). However, as noted above, Morency and Krauss found no differences

in decoding ability between mothers and fathers. Zuckerman and Przewuzman (1979) found mothers' decoding superior to fathers'. Although they found that correlations between the decoding skills of spouses was not significant, when correlations were computed by type of affect, significant results were obtained. This suggests that mothers' and fathers' abilities to decode particular types of emotions might be related. In any case, further study of these differences and similarities seems warranted.

## The Present Study

The present study sought to replicate and extend the findings of the Feinman and Feldman study (reported above). Parent-child communication accuracy was investigated by looking at mothers' and fathers' abilities to decode the nonverbal presentations of four affects (happiness, sadness, fear, and anger) in their own children where the children's affect was spontaneously encoded. Parent-child scores of communication accuracy were compared to a matched control group of adults who were not parents. In order to determine if there were generalizable effects due to parenting on nonverbal decoding ability, parents and nonparents were also asked to attempt to decode the nonverbal expressions of the same four affects produced by stimulus children unrelated to the parents.

In addition to the primary measure of communication accuracy (decoders' abilities to correctly categorize affective expressions), a second, more global measure of ability to assess children's affective states on a pleasantness-unpleasantness dimension was also obtained.

A viewing and rating procedure was employed wherein parents observed the facial expressions of children in several affect-inducing situations and made judgments about the specific nature of the encoding situation. The affect induction was based on a procedure that had been validated for four year old children by several studies (Masters, Barden, and Ford, 1979; Bugental and Moore, 1979). Children were asked to generate affect-provoking thoughts appropriate to each of the affects to be studied. They were then asked to concentrate on each of these thoughts for a brief period while their nonverbal facial expressions were secretly videotaped and observed by their parents (and later by the adult controls).

The validity of this procedure had been shown by a number of studies (as noted above). Masters, Barden, and Ford (1979) employed this procedure to induce happy and sad affects in pre-school children. Independent raters observed and categorized the facial expressions produced by the children according to procedures defined by Ekman, Friesen, and Ellsworth (1971). They found this procedure

to produce valid and reliable expressions of happiness and sadness (anger and fear were not studied). Bugental and Moore (1979) employed voice quality ratings to measure moods that were actually induced by this cognitive affect-inducing procedure. Again, results indicated the validity of the procedure.

Hypotheses. The primary hypothesis to be investigated was:

1. That significant communication accuracy would be obtained for child-parent pairs and that this accuracy would be greater than that obtained by child-nonparent pairs.

In addition, several secondary hypotheses, suggested by prior research, were also investigated:

2. Sex differences in encoding would be found, with males expected to be poorer encoders than females.
3. There would be differential communication of affect, with positive affect (happiness) expected to be communicated best.
4. Mothers would be found to be more accurate decoders than fathers.
5. Parents would be more accurate decoders of their own children compared to other, unrelated children.

# CHAPTER II

## METHOD

### Subjects

Children, ages four to six, were recruited by letter from local nursery schools and kindergartens (see Appendix A). Twenty-four children (twelve male, twelve female) were included in the study. Ages of the children ranged from 4 years, 0 months to 6 years, 11 months with the sample being evenly divided between four, five, and six year olds. Children served as senders (encoders) of nonverbal affective expressions while parents (twenty-four mothers and twenty-four fathers) served as the primary group of receivers (decoders) attempting to judge the type of affect expressed by the children. Parents were all married and living together with their children.

A control group of twenty-four men and twenty-four women, who were not parents, were matched with the children's parents and served as nonparent decoders. The nonparents were matched with the parents on the basis of age (within five years), socio-economic status, and as closely as possible, by type of occupation. Demographic data on the children and matched sets of decoders are given in Appendix B. The socio-economic background of the sample was, for the most part, upper middle-class as determined

by the Two-Factor Index of Social Position (Hollingshead, 1957).

## Procedures

Encoders. The encoding procedure was similar to that described by Masters, Barden, and Ford (1979). Each child was taken to the experimental room by the same female experimenter. They were seated comfortably at a table on which were placed a few neutral objects (e.g., plants, etc.). For each of the four affective conditions (happiness, sadness, fear, and anger), the child was asked to generate a thought and concentrate on it for twenty seconds. The order of affective conditions was randomized across all subjects.

The specific instructions to the child were as follows (from Masters, Barden, and Ford, p. 382):

> You know, (child's name), sometimes things happen that make us feel happy, and sometimes things happen that make us feel sad, and sometimes things happen to us that make us feel mad or scared. Can you remember something that happened to you that made you feel happy (sad, etc.), really happy (sad, etc.)? Now, (name of child), I want you to use your imagination, all right? Our imagination really works sometimes, doesn't it? It can really make us believe things, can't it? All right now, I want you to look at that (neutral object) for a few seconds, and think of something that makes you feel happy (sad, mad, scared). That's right, think of something that really makes you feel happy (sad, mad, scared).

The child was given twenty seconds to look at the neutral

object and think. The experimenter maintained intermittent eye contact with the child to help keep the child focused on the task (Underwood, Moore, and Rosenhan, 1973). The child's facial expressions were unobtrusively and secretly videotaped.

Following each twenty-second period of concentration on an affect-provoking thought, the child was asked to rate how good or bad he or she felt by the use of a rating scale devised by Buck (1975) (see Figure 1). The scale consisted of drawings of five faces from "very good" (very happy) to "very bad" (very unhappy). The child was given the following instructions (modified from Buck, p. 646):

> Now tell me how you felt just now while you were thinking about that really happy (sad, mad, scary) thing by pointing to one of these faces. If you really felt good, very good, point to this smiling face here (demonstrated). If you liked or didn't like thinking about it a little, point to one of these faces (demonstrated). If you didn't feel anything, one way or the other, point to this face here (demonstrated).

Following presentation of the rating scale, the child was given a toy to play with for a few minutes to help neutralize the carryover of affect from one situation to the next. A total of four inductions, one for each of the four affective categories, were carried out for each child.

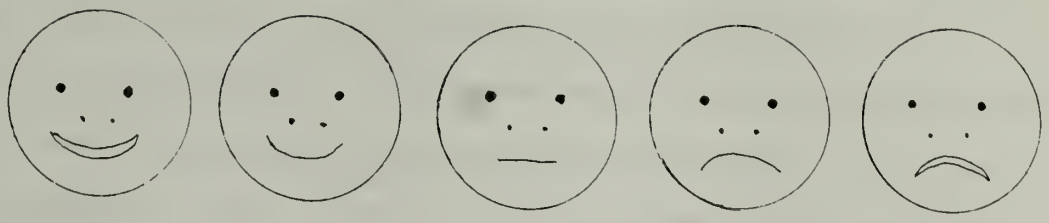

Figure 1. Scale used by the child to rate his/her emotional experience.

Following all the inductions, the experimenter asked for, and recorded, the thoughts used by the child to generate each affect. The experimenter then presented the happy-sad face scale again and asked the child "Which is the happiest face?" "Which is the saddest face?" The child's response was recorded and used later to assess the children's understanding of the scale. The child was then taken to meet his or her parents as soon as the parents were finished with their ratings (described below). A debriefing session with parents and children followed.

Parents' decoding. Following the taping of their children's affective expressions, the parents were taken to separate experimental rooms by the same male experimenter. The two rooms were separated in such a way that the parents were unable to see nor hear anything from each others' rooms. The parents were given prepared rating forms (see Appendix C) on which to indicate their judgments of affective expressions and to rate the child's experiences on the pleasantness-unpleasantness dimension. The experimenter gave the following instructions separately to each parent:

> (Name of child) was asked to think about things that have happened that have made him/her feel different ways. There were four kinds of things that he/she was asked to think about. Things that made him/her feel happy, things that made him/her feel sad, things that made him/her feel angry, and things that made him/her feel afraid. Each time (name) appears on

> your monitor, I'd like you to watch (name's) face for as long as it appears and then try to guess what kind of thought he/she was thinking. I'd also like you to try to rate how pleasant or unpleasant you think he/she felt each time by making a mark in one of these boxes (demonstrated). Do you have any questions?

Questions were then answered and the parents were shown what they would be seeing on their television screen. The experimenter than said:

> I'll turn on the TV just as (name) begins each thought and you'll see his/her face for twenty seconds until the experimenter in the room with (name) began to talk with him/her. At that point, I'll turn off the TV and your screen will go blank. Make your ratings then about what kind of thought (name) was just thinking and how pleasant or unpleasant it made him/her feel. Any questions?

Questions were again answered and if the task was understood, the experimenter proceeded as described below.

Parents were shown eight separate video clips of their child's affective expressions (each of the four expressions corresponding to the four affective categories studied was shown twice). The order of presentation of the eight video clips was randomized independently for each child with each set of decoders (parents and non-parents) seeing the same order of presentation.

Stimulus children. Hypothesis 5 predicted that parents would be more accurate decoders of their own children compared to other children. In order to test this hypothesis, videotapes of the affective expressions of two randomly

selected stimulus children (one male, one female, both five years old) were obtained in the exact same manner as described above. Following the presentation of the eight video clips of their own children, parents were shown eight video clips of one of the two stimulus children. Parents of male children were shown the male stimulus child. Parents of female children were shown the female stimulus child. The parents were told that they would see eight separate video clips of their own child followed by eight clips of a second child and that they were to try and make the same sort of judgments for each child.

After all the data were obtained, the children were brought to their parents' room, the experiment was explained, and demographic data were recorded.

Nonparents' decoding. Nonparent decoders were scheduled separately from the parents. Each of the matched, nonparent decoders was taken to the same experimental room as the parents and shown the same videotape of the children's expressions (the expressions of the parents' child followed by those of the stimulus child). The instructions and rating forms, as well as the order of presentation of expressions, were identical to the parents'. Following presentation of the videotape and the collection of data and demographic information, they were each debriefed.

# CHAPTER III

## RESULTS

Nonverbal communication accuracy was assessed on two separate measures: a categorization measure and a pleasantness measure. Separate analyses were conducted with the data from each of these measures. In addition, communication accuracy was assessed separately for observers' ratings of the parents' own children as well as the two stimulus children. Since the primary interest of the research focused on parents' and nonparents' abilities with the parents' children, these results will be reported first.

### Parents' Own Children

Categorization measure. Children were asked to generate and concentrate on their own thoughts keyed to each of the affective categories. Parents and nonparent controls were shown the videotapes of the children's expressions and asked to attempt to indicate the category of affect (happiness, sadness, anger, or fear) for each video clip shown. For sender-observer pairs, the percentage of correct judgments in each of the four affective categories was determined. Because the resulting scores were percentages, an arc sine transformation was employed to produce homogeneity of variance and allow an analysis of

variance (Myers, 1972). All means reported below, however, are raw scores for purposes of clarity.

A 2(parents vs. nonparents) X 2 (sex of observer) X 2 (sex of encoder) X 4 (type of affect) mixed-design analysis of variance was employed. The first three variables were between subjects factors and the latter variable was the within subjects factor. Post hoc comparisons of interest were contrasted using the Duncan New Multiple Range Test (Duncan, 1955).

The results of the analysis of variance are displayed in Table 1. Two significant main effects were found; one for sex of encoder, $F(1,88) = 4.17$, $p<.05$, and one for type of affect, $F(3,264) = 9.30$, $p < .0001$. No other main effects nor any of the interactions were found to be significant.

The significant main effect for sex of encoder gives direct support for Hypothesis 2, with males found to be poorer encoders than females. Encoding accuracy of female children was 26.8 percent, while the male children's encoding accuracy was 16.1 percent. It should be noted, however, that neither females nor males were decoded at rates significantly better or lower than what would be expected by chance alone (an observer should identify correctly 25 percent of affective expressions by chance alone).

TABLE I

Analysis of Variance for Categorization Measure:

Parent's Own Children

| Source | df | MS | F |
|---|---|---|---|
| Between S | | | |
| Type of Observer(A) | 1 | 1033.59 | 0.80 |
| Sex of Observer(B) | 1 | 337.50 | 0.26 |
| Sex of Encoder(C) | 1 | 5400.00 | 4.17* |
| A X B | 1 | 84.38 | 0.07 |
| A X C | 1 | 0.00 | 0.00 |
| B X C | 1 | 21.09 | 0.02 |
| A X B X C | 1 | 527.34 | 0.41 |
| Error | 88 | 1294.39 | |
| Within S | | | |
| Type of Affect(D) | 3 | 9063.28 | 9.30** |
| A X D | 3 | 428.91 | 0.44 |
| B X D | 3 | 385.94 | 0.91 |
| C X D | 3 | 14.06 | 0.01 |
| A X B X D | 3 | 1448.44 | 1.49 |
| A X C X D | 3 | 379.69 | 0.39 |
| B X C X D | 3 | 91.41 | 0.09 |
| A X B X C X D | 3 | 119.53 | 0.12 |
| Error | 264 | 974.79 | |

*$p$ <.05
**$p$ <.0001

The errors made in decoding when both male and female children were encoding were examined to see if observers were systematically misattributing any particular affect to either sex. For each sex of encoder, the errors made by all observers in decoding each of the affective categories were summed. Chi-square statistics were then calculated for each sex of encoder to determine the significance of the observed vs. expected frequency of types of errors. Table 2 presents observers' errors for each sex of encoder. The chi-squares for both males and females were found to be significant (males, $\chi^2(3) = 48.76$, $p < .001$; females, $\chi^2(3) = 49.97$, $p < .001$). For both sexes, observers misattributed sadness most often (male encoders = 40.49 percent, female encoders = 39.84 percent).

As expected, there was a significant main effect for type of affect. However, the pattern of communication accuracy obtained differed from the prediction that happiness would be most accurately decoded. Table 3 presents the mean accuracy scores (in percent correct) for each of the affective categories. Sadness was successfully decoded best (42.7 percent), followed by happiness (20.9 percent) and fear (16.4 percent). Anger was decoded least accurately (9.4 percent). Post hoc comparisons revealed that sadness was decoded at levels significantly better than what would be expected by chance alone and better

TABLE 2

Errors Made by All Observers

With Male and Female Encoders

| | Erroneous Choices (%) | | | |
|---|---|---|---|---|
| | Happiness | Sadness | Anger | Fear |
| Male | 14.08 | 40.49 | 17.25 | 28.17 |
| Female | 19.14 | 39.84 | 19.92 | 21.09 |

TABLE 3

Percent Correct for Decoding Affective Categories

| | |
|---|---|
| Happiness | $20.9_{b}$ |
| Sadness | $42.7_{a}$ |
| Anger | $9.4_{b,c}$ |
| Fear | $16.4_{b}$ |

(Similar subscripts indicate insignificant differences between means.)

than any of the other four affects, $p < .05$. Anger was decoded at levels significantly worse than what would be expected by chance alone, $p < .01$, but not significantly below any affect other than sadness.

Again, the errors made in decoding affective categories were examined to see if any particular decoder biases in misattributing affective categories existed. Table 4 presents the errors made in decoding affective categories. Chi-square statistics were calculated for each affective category and revealed that errors made in decoding each of the affects produced frequencies of erroneous choices significantly different from expectation (happiness, $\chi^2(2) = 9.01$, $p < .05$; sadness, $\chi^2(2) = 10.00$, $p < .01$; anger, $\chi^2(2) = 19.49$, $p < .001$; fear, $\chi^2(2) = 35.89$, $p < .001$. In failing to decode accurately happiness, anger, and fear, observers most often misattributed sadness (44.8 percent, 50 percent, and 57 percent respectively). In failing to decode sadness accurately, observers most often misattributed fear (47.6 percent). Thus, there appeared to be a strong decoder bias in choosing the sadness category when failing to decode facial expressions accurately.

To summarize, the results obtained with the categorization measure of communication accuracy give mixed support for the first four hypotheses. With regard to

TABLE 4

Errors Made by All Observers

in Decoding Affective Categories

| | Erroneous Choices (%) | | | |
|---|---|---|---|---|
| Correct Category | Happiness | Sadness | Anger | Fear |
| Happiness | -- | 44.8 | 23.8 | 31.4 |
| Sadness | 23.8 | -- | 28.6 | 47.6 |
| Anger | 23.4 | 50.0 | -- | 26.6 |
| Fear | 20.1 | 57.0 | 22.9 | -- |

Hypothesis 1, that parents would be more accurate decoders of their own children compared to nonparents, the results were quite surprising. No significant differences were found between parents and nonparents in decoding ability with the parents' own children despite the parents' greater social history with their own children. Hypothesis 2, by contrast, was confirmed in that there were significant differences in encoding with male children being poorer encoders than female children. When observers erred in choosing affective categories, they were most prone towards errors in attributing sadness for both male and female children.

With regard to the prediction that decoding ability would be found to vary by type of affect encoded, Hypothesis 3, significant differences were found, partially confirming this hypothesis. However, positive affect (happiness) was not found to be decoded best. Rather, sadness was the only affect found to be decoded at greater than chance levels in addition to being differentially decoded at significant levels compared to the other three affects. Anger was found to be decoded with least accuracy and significantly lower than what might be expected by chance alone. In examining decoding errors, there apparently was a rather consistent tendency on the part of observers to err in the direction of sadness no matter the

affective category examined.

Finally, no differences in communication accuracy were found as a function of sex of observer and, thus, Hypothesis 4 was not supported. Mothers were not significantly more accurate than fathers, nor were women more accurate generally than men.

Pleasantness measure. The pleasantness measure was employed as a second, more global, means of assessing communication accuracy. Observers, parents and nonparents, were asked to judge the children's general feeling state on a pleasant-unpleasant dimension. For each affective category, children rated their own feelings on a five-point scale by indicating which of the faces in Figure 1 corresponded best with their feelings while self-generating each thought. A rating of 1 indicated that their thoughts made them feel "very good" while a rating of 5 indicated they felt "very bad". Ratings of 2 through 4 were intermediate. The children's mean ratings indicated that the happiness category was experienced as the most pleasant ($M = 1.38$) while the anger category was experienced as the most unpleasant ($M = 3.75$). Mean ratings for fear and sadness were 3.38 and 3.63 respectively. A one-way analysis of variance was employed to test the significance of differences between the children's ratings

of the four affective categories (see Table 5). Results of this analysis showed that the means for type of affective category differed significantly, $F(3,92) = 27.08$, $p < .001$. Post hoc comparisons showed that the mean rating for the happiness category was significantly different from the three other thought categories but that no other differences between means were significant, $p < .01$. The resulting rating pattern indicated that while the happiness thoughts produced the most pleasant feelings for the children, the thoughts produced for the other three categories (fear, sadness, and anger) were experienced as more unpleasant. This suggests that the children were able to use the rating scale as intended and that their ratings of their experiences in reaction to the self-generated thoughts were appropriate and as expected. In addition, further validation of the children's understanding of the rating scale was obtained by examining the means for their responses to the questions about the "happiest face" and the "saddest face". The mean response to the question "Which is the happiest face?" was 1.12 while the mean response to the question "Which is the saddest face?" was 4.54.

While the child rated his or her experience for each self-generated affective thought, observers were asked to similarly rate the child's experience. A difference score

TABLE 5

Analysis of Variance for Children's Ratings of Affective Categories on Pleasantness Measure

| Source | df | MS | F |
|---|---|---|---|
| Type of Affect | 3 | 29.84 | 27.08* |
| Error | 92 | 1.10 | |

*$p < .001$

was calculated between the child's rating and the observer's rating. The child's score on the five-point rating scale was subtracted from the observer's score and the absolute value was then taken. A difference of 4 indicated maximum inaccuracy. Thus, the lower the score, the less the discrepancy. The differences for each affective category and for each child-observer pairing were then summed.

Subsequently, a 2(parents vs. nonparents) X 2 (sex of observer) X 2 (sex of encoder) X 4 (type of affect) mixed-design analysis of variance was conducted. Table 6 gives the results of this analysis. Only one significant result was found, for type of affect, $F(3,264) = 15.02$, $p < .0001$. No other main effect nor any interaction produced significant results. Again, Hypothesis 3 was partially confirmed by the data analysis in that communication accuracy on this measure (discrepancies between observers' and children's ratings of children's experiences) was found to vary as a function of type of affect. However, positive affect (happiness) was again not found to produce the greatest accuracy. Mean difference scores are presented in Table 7. The sadness category was again found to produce the greatest communication accuracy in that the least discrepancy was found between observers' and children's ratings for this affective category ($M = 2.14$).

TABLE 6

Analysis of Variance for Pleasantness Measure: Parents' Children

| Source | df | MS | F |
|---|---|---|---|
| Between S | | | |
| Type of Observer (A) | 1 | 0.09 | 0.03 |
| Sex of Observer (B) | 1 | 0.67 | 0.22 |
| Sex of Encoder (C) | 1 | 6.00 | 1.98 |
| A X B | 1 | 5.04 | 1.67 |
| A X C | 1 | 0.00 | 0.00 |
| B X C | 1 | 0.26 | 0.09 |
| A X B X C | 1 | 0.51 | 0.17 |
| Error | 88 | 3.03 | |
| Within S | | | |
| Type of Affect (D) | 3 | 40.65 | 15.02* |
| A X D | 3 | 0.79 | 0.29 |
| B X D | 3 | 0.18 | 0.07 |
| C X D | 3 | 1.96 | 0.72 |
| A X B X D | 3 | 0.78 | 0.29 |
| A X C X D | 3 | 0.49 | 0.18 |
| B X C X D | 3 | 0.54 | 0.20 |
| A X B X C X D | 3 | 0.79 | 0.29 |
| Error | 264 | 2.71 | |

*$p < .0001$

TABLE 7

Mean Difference Scores by Type of Affect:

Pleasantness Measure

| | |
|---|---|
| Happiness | $3.49_a$ |
| Sadness | $2.14_b$ |
| Anger | $2.24_b$ |
| Fear | $2.20_b$ |

(Similar subscripts indicate insignificant differences among means.)

Mean discrepancies for fear and anger were 2.20 and 2.24 respectively. Surprisingly, happiness was found to produce the greatest difference scores (M = 3.49) with children's ratings being far more positive than observers' ratings. Post hoc comparisons revealed that the mean for happiness differed significantly from the other three affects but no other differences among means was significant, $p < .01$.

Thus, results on the pleasantness measure are somewhat inconsistent with results on the categorization measure. Sadness, the affect communicated best on the categorization measure was, in fact, responsible for producing the least discrepancies on the pleasantness measure. But anger, the affect least accurately decoded on the categorization measure, did not produce the greatest discrepancy in communication accuracy on the pleasantness measure. Instead, happiness (which had been communicated second best on the categorization measure) was found to produce the greatest discrepancy on the pleasantness measure.

## Secondary Analyses: Ratings of Stimulus Children

Videotapes of the affective expressions of two children unrelated to parents and nonparents in the study (termed stimulus children for purposes of clarity) were

obtained in the same manner as that for the parent's children as described in Chapter II. These tapes were shown to both parents and nonparents following presentation of the expressions of the parents' children. Parents and nonparents then made similar ratings of stimulus children's expressions. The data generated by this procedure were used to test Hypothesis 5 (that parents would be more accurate decoders of their own children compared with other, unrelated children) as well as to test the notion that parenting, in general, leads to greater nonverbal communication ability (described below).

Two types of analyses were employed in order to test Hypothesis 5. Analyses of variance were conducted on both measures of communication accuracy (the categorization measure and the pleasantness measure) for the data produced by parents' judgments of their own and other children.

It should be noted that caution should be exercised in examining these data as the findings are based on judgments obtained from observers' (parents') ratings of parents' children compared with only one of two stimulus children (either the male or female stimulus child). The particular encoding characteristics of these two stimulus children might therefore account for most of the effects found.

Categorization measure: parents' decoding of their own compared to other children. A 2(own child vs. other child) X 2 (sex of observer) X 2 (sex of encoder) X 4 (type of affect) mixed-design analysis of variance was employed to test whether parents were more accurate in decoding their own compared to other children (Hypothesis 5). Results of this analysis are reported in Table 8. Significant main effects were found for sex of encoder, $F$ (1,88) = 15.53, $p$ <.001, (with males being poorer encoders than females) and type of affect, $F(3,264) = 6.60$, $p < .001$, (with the affects happy, sad, and fear being decoded with no better than chance accuracy but anger being decoded at far worse than chance levels). However, these effects are not of major interest here. What is of interest, is that the main effect for type of relationship (parents' own vs. other children) was found to be nonsignificant. Generally, then, parents are apparently no more accurate at decoding their own children compared with other unrelated children.

However, several interaction effects were found to be significant and two of these involve type of relationship, the variable of interest here. A significant interaction was found between type of affect and type of relationship, $F(3,264) = 5.74$, $p < .001$. Table 9 presents the mean accuracy scores (percent correct) within this

TABLE 8

Analysis of Variance for Categorization Measure of Communication Accuracy: Parents' Own vs. Other Children

| Source | df | MS | F |
|---|---|---|---|
| Between S | | | |
| Type of Relationship(A) | 1 | 891.21 | 0.81 |
| Sex of Observer (B) | 1 | 5.27 | .00 |
| Sex of Encoder (C) | 1 | 17133.40 | 15.53* |
| A X B | 1 | 131.84 | 0.12 |
| A X C | 1 | 3295.90 | 2.99 |
| B X C | 1 | 47.46 | 0.04 |
| A X B X C | 1 | 638.09 | 0.58 |
| Error | 88 | 1103.11 | |
| Within S | | | |
| Type of Affect (D) | 3 | 5503.71 | 6.60* |
| A X D | 3 | 4786.52 | 5.74* |
| B X D | 3 | 1228.71 | 1.47 |
| C X D | 3 | 4266.21 | 5.12* |
| A X B X D | 3 | 905.27 | 1.09 |
| A X C X D | 3 | 4941.21 | 5.93* |
| B X C X D | 3 | 1158.40 | 1.39 |
| A X B X C X D | 3 | 230.27 | 0.28 |
| Error | 264 | 833.36 | |

*$p < .001$

TABLE 9

Percent Correct for Categorization Measure of Communication Accuracy for Parents' Own vs. Other Children: Type of Affect X Type of Relationship

| | Own Child | Other Child |
|---|---|---|
| Happiness | $20.9_a$ | $40.4_b$ |
| Sadness | $41.9_c$ | $14.6_d$ |
| Anger | $5.2_e$ | $11.3_e$ |
| Fear | $14.6_e$ | $30.9_e$ |

(Within rows, similar subscripts indicate insignificant differences.)

interaction. The pattern of decoding accuracy for parents' own children is as reported above with sadness being decoded most accurately and anger, least accurately. However, of greater interest, post hoc comparisons reveal that parents are significantly more accurate at decoding expressions of sadness in their own children compared to other children, $p < .01$, but significantly less accurate at decoding expressions of happiness in their own children compared to other children, $p < .05$. No other differences between parents' decoding of their own children compared with the stimulus children were found to be significant.

One other significant interaction effect of interest was that between type of affect, type of relationship, and sex of encoder, $F(3,264) = 5.93$, $p < .001$. Percentage correct for parents' decoding abilities with respect to this interaction are given in Table 10. Perhaps of greatest potential interest here is the finding that the parents' greater ability to identify correctly expressions of happiness in other children compared with their own appears mostly to be a function of greater accuracy in decoding the expressions of the female stimulus child, $p < .01$.

It should be stressed again that these findings should be subject to extreme caution in interpretation as differences in encoding ability within the two stimulus chil-

TABLE 10

Percent Correct for Categorization Measure of Communication Accuracy for Parents' Own vs. Other Children: Type of Affect X Type of Relationship X Sex of Encoder

| | Own Child | | Other Child | |
|---|---|---|---|---|
| | Male | Female | Male | Female |
| Happiness | 17.0 | 25.0 | 2.7* | 87.6* |
| Sadness | 40.2 | 43.5 | 12.4 | 17.0 |
| Anger | 1.7 | 10.3 | 6.7 | 17.0 |
| Fear | 8.4 | 22.2 | 27.9 | 33.9 |

(* indicates a significant difference between scores.)

dren and between these two children and the parents' children may account for much of the differences. Nevertheless, the finding that parents seem no more accurate, in general, with their own compared with other children may be suggestive of a real difference.

Pleasantness measure. A 2 (type of relationship) X 2 (sex of observer) X 2 (sex of encoder) X 4 (type of affect) mixed-design analysis of variance was employed to test the significance of discrepancies between parents' ratings of the children's expressions and the children's own ratings of their experiences. A summary of this analysis of variance is given in Table 11. Significant main effects were found for sex of encoder, $F(1,88) = 26.39$, $p < .0001$, with females being decoded more accurately than males, and for type of affect, $F(3,264) = 31.60$, $p < .0001$, with happiness again producing the greatest discrepancies followed by anger, fear, and sadness. Again, as with the categorization measure, no significant main effect was found for type of relationship (parents' decoding their own compared with other children). However, two significant interactions were found involving parents' abilities to differentially decode their own compared with other children. A significant interaction was found for type of relationship and sex of encoder, $F(1,88) = 11.81$, $p < .001$. Mean difference

TABLE 11

Analysis of Variance for Pleasantness Measure: Parents' Own Compared with Stimulus Children

| Source | df | MS | F |
|---|---|---|---|
| Between S | | | |
| Type of Relationship (A) | 1 | 9.69 | 4.67 |
| Sex of Observer (B) | 1 | 5.75 | 2.77 |
| Sex of Encoder (C) | 1 | 54.75 | 26.39* |
| A X B | 1 | 0.44 | 0.21 |
| A X C | 1 | 24.50 | 11.81** |
| B X C | 1 | 0.59 | 0.28 |
| A X B X C | 1 | 0.21 | 0.10 |
| Error | 88 | 2.07 | |
| Within S | | | |
| Type of Affect (D) | 3 | 72.97 | 31.60* |
| A X D | 3 | 4.74 | 2.05 |
| B X D | 3 | 2.55 | 1.11 |
| C X D | 3 | 12.48 | 5.41** |
| A X B X D | 3 | 0.96 | 0.42 |
| A X C X D | 3 | 9.59 | 4.15*** |
| B X C X D | 3 | 0.98 | 0.43 |
| A X B X C X D | 3 | 1.63 | 0.71 |
| Error | 264 | 2.31 | |

* $p < .0001$
** $p < .001$
*** $p < .01$

scores for this interaction are reported in Table 12. Post hoc comparisons revealed a significant difference between parents' decoding of their own female children compared with the female stimulus child in the direction of finding less discrepancy for parents' ratings of the stimulus child, $p < .05$.

A second significant interaction was found between type of relationship, type of affect, and sex of encoder, $F(3,264) = 4.15$, $p < .01$. Table 13 presents the mean difference scores for this interaction. It can be seen that much of the difference in this interaction is accounted for by differences in parents' decoding of the male and female stimulus children's expressions of happiness and fear, again in the direction of least discrepancy for the female child.

Analysis of the data on the pleasantness measure comparing parents' accuracy with their own children and other children suggests that there may be some differences which are moderated by sex of encoder and type of affect. However, of greatest importance is that no significant findings were produced showing parents to be at any general advantage in decoding their own children compared to other children. Again, it must be remembered that these results are highly speculative because of the dependence on the particular encoding characteristics of the two stimulus children employed.

TABLE 12

Mean Difference Scores for Parents' Own Compared With Other Children as Moderated by Sex of Encoder

| | Own Child | Other Child |
|---|---|---|
| Male | $2.66_a$ | $2.84_a$ |
| Female | $2.41_b$ | $1.58_c$ |

(Within rows, similar subscripts indicate insignificant differences.)

TABLE 13

Mean Difference Scores for Parents' Observations of Their Own Compared to Other Children: Type of Relationship X Type of Affect X Sex of Encoder Interaction

| | Own Child | | Other Child | |
|---|---|---|---|---|
| | Male | Female | Male | Female |
| Happiness | 3.63 | 3.42 | 5.21* | 2.46* |
| Sadness | 1.92 | 2.21 | 1.67 | 1.67 |
| Anger | 2.71 | 2.04 | 1.83 | 1.46 |
| Fear | 2.38 | 1.96 | 2.67* | 0.75* |

(Within rows, * indicates significant differences among means.)

Parents' vs. nonparents' judgments of the two stimulus children. An analysis of variance was performed for parents' and nonparents' judgments of the expressions of the two stimulus children to see if any general parenting factor contributes to greater communication accuracy for parents. No such support was found as differences between parents and nonparents were nonsignificant. Other main effects for type of affect (happiness being decoded best, followed by fear, anger, and sadness) and for sex of encoder (females decoded more accurately than males) and one interaction effect (type of affect X sex of encoder) were found to be significant but since this was not a primary area of interest for this research, and since ratings of only two encoders are compared, these data will not be reported further. (Analysis of variance tables for the categorization measure and pleasantness measure of parents' and nonparents' communication accuracy with stimulus children are reported in Appendix D and Appendix E respectively.)

# CHAPTER IV

## DISCUSSION

The present study was conducted to extend the literature on the nonverbal communication of affect between parents and children by employing a spontaneous encoding paradigm to test mothers' and fathers' abilities to decode expressions of four specific affects in their own and other children. In particular, the present study was based on the study by Feinman and Feldman (1982) and was designed, in part, as an attempt to replicate and validate the results of that study.

It was expected that parents would be more accurate decoders than nonparents, that girls would be more accurately decoded than boys, that decoding accuracy would depend on the specific affect examined, that mothers would be more accurate than fathers, and that parents would be more accurate with their own children than with other children encoding.

Only two of the five experimental hypotheses were at least partially supported by the data analysis. Sex differences in encoding were found and, as predicted, female children were found to be better encoders than male children. Accuracy in decoding was, as predicted, found to vary as a function of the type of affect encoded. However,

decoding accuracy was not greatest for positive affect (happiness) but instead sadness was decoded most accurately and at levels significantly above chance expectation. Interestingly, anger was found to be decoded at levels far below chance expectation.

Quite surprisingly, none of the remaining three hypotheses received any support from the data analysis. Parents were found to be no more accurate than nonparents at decoding affective expressions of their own children. In addition, mothers were no more accurate than were fathers on the two measures of communication accuracy (nor were women more accurate than men, in general). Finally, parents were no better at decoding the expressions of their own children as compared to the expressions of other unrelated children.

The findings with regard to each of the experimental hypotheses will be discussed more fully below.

## Decoding Accuracy: Parents vs. Nonparents

Perhaps the finding of greatest interest in this study, and the finding that is most surprising given the greater social history of parents with their children, is the failure to find a significant difference between parents' ability to decode the expressions of their children and the decoding ability of the matched nonparent group. This

was true for both measures of communication accuracy. In fact, neither group of decoders (parents or nonparents) produced decoding accuracy scores significantly above chance expectation.

Previous research had produced mixed results with regard to parents' vs. nonparents' decoding skills. Buck (1975) found significant communication accuracy on both the categorization measure and the pleasantness measure for mothers in decoding more general affective expressions (though no direct comparisons between mothers' and nonmothers' performances were reported). Morency and Krauss (1982) found only minimal decoding accuracy and no differences between parents and nonparents when affect was induced spontaneously (significant differences between parents and nonparents were found in a role-playing encoding condition). Though the decoding of specific affective expressions was not studied by Morency and Krauss, their results seem to be supported by the present study.

Feinman and Feldman (1982) studied mothers' decoding skill compared with nonmothers' using a design similar to the present study (spontaneous encoding of affect and four specific affective categories). However, an affect induction procedure different from the procedure employed here was used. Their results indicated no overall advantage for parents (mothers) compared to nonparents (non-

mothers) in decoding affective expressions. However, a significant difference did emerge as a function of type of affect expressed. Mothers were more accurate than nonmothers (and decoded expressions at greater than chance levels) when decoding positive affect (happiness) but less accurate than nonmothers (with decoding accuracy far worse than chance) when decoding anger. These results suggested that parental (maternal) defenses may have operated to inhibit accuracy when a particularly troubling negative affect was expressed (anger) while no such inhibition impeded accuracy with positive affect; the implication being that parents might be better decoders than nonparents were it not for their unique investment in seeing their children feel "good".

In the present research, not only was a general decoding advantage for parents absent from the results, but neither was any interaction between type of affect and parental status found. Feinman and Feldman's hypothesized parental defenses thus seem, at first glance, to be unsupported by these results and the present research tends to support the general findings of Morency and Krauss instead.

However, it is possible that parents were more inhibited compared to nonparents by another sort of "defensive operation". Parents may have been differentially more

susceptible to performance anxiety in the experimental situation in the present study. Both groups of observers were told that the children would be thinking about emotional events in their lives. Nonparents, with no particular investment in these children, would be subject to relatively minimal levels of anxiety in the experimental situation. However, parents might have recalled particularly disturbing or intriguing events in their children's lives (and/or in addition, events that involved the children and the parents themselves). While this might not normally be expected to inhibit their communication ability, coupled with the anxiety of performing well in the experimental task and perhaps their greater expectations with regard to their performance on this task in decoding their own children, parents may have been unable to fully employ their greater potential to use their specific knowledge of their children to their advantage in decoding. Thus, no differences from nonparents nor from chance levels of performance would be found and the parents' hypothesized greater decoding ability would be effectively "masked". It should be recalled that the above-mentioned study by Feinman and Feldman employed a story-telling and slide-viewing affect induction procedure. Parents and nonparents were told that the children would be hearing stories and seeing slides about other children.

This encoding technique may have appeared more neutral to parents in the sense that their own children would be focusing on more "distant" events, not their own experiences, and so perhaps parental anxiety was not as aroused. Since anxiety level of parents and nonparents was not controlled for in either study, undetected differences in performance anxiety between parents and nonparents generally, as well as between the parent sample in this research and the sample employed by Feinman and Feldman, may account for differences in the results of these studies.

One other alternative explanation for the failure to find differences between parents' and nonparents' decoding skills in the present research may involve another methodological difficulty. Generally, this phenomenon may be found to be a function of the particular characteristics of this sample of observers with regard to socio-economic status (educational level and occupational type) and general level of verbal ability. In the present research, parents and nonparents were matched generally along several dimensions including socio-economic status and type of occupation. The study by Feinman and Feldman matched mothers and nonmothers by socio-economic status but not by type of occupation. An examination of the demographic data given in Appendix B suggests that this sample is

generally drawn from the middle and upper-middle socio-economic classes (similar to Feinman and Feldman). However, both parents and nonparents appear to be especially well-educated, many in fields with a highly verbal orientation (e.g., English, writing). It may be that the addition of matching by type of occupation together with a possible verbal preference of this sample and the generally elevated socio-economic status of observers functions to obscure a difference in nonverbal ability that might exist (for parents) were it not for the confluence of these factors. It is possible that these factors add up to an over-reliance on verbal means of understanding emotional expression, thus resulting in no better than chance decoding of nonverbal expressions for parents, and therefore, no difference between parents and nonparents. In effect, the parents' greater knowledge of their own children and the impact of this knowledge on their decoding abilities may be "washed out" by factors of socio-economic status and verbal over-reliance.

Finally, it may be that the generally low level of decoding accuracy for observers (M = 21.5 percent) itself suppresses any differences between parents and nonparents and that this lowered level of decoding accuracy is a function of a relatively weak spontaneous encoding paradigm. Even when similar encoding paradigms are used, results

across studies are not always consistent. For example, Morency and Krauss (1982) employed the identical spontaneous encoding paradigm as Buck (1975, 1977), and while Buck obtained significant decoding accuracy, Morency and Krauss found only minimally significant decoding accuracy and failed to find decoding differences between parents and a comparison group of parents unrelated to the child subjects. Thus, even within similar paradigms, there is wide variability. In addition, the lack of a standardized affect induction technique presents serious difficulties for the interpretation of this literature.

The implications of these alternative explanations for the development of parental empathy as well as for future research in this area will be discussed further below.

## Effects of Sex of Encoder

In the present study, sex of encoder was found to significantly affect communication accuracy on the categorization measure (although not on the pleasantness measure), with female children, as expected, being significantly more effective encoders than male children. Results consistent with the present findings have been previously reported by Buck (1975, 1977) as well as Zuckerman and Przewuzman (1979).

Perhaps the best way to interpret the present results is, as Buck (1975) suggests, in terms of the differential effects of socialization on male and female children. Buck

has hypothesized that the display rules for concealing expressions of affect may apply more heavily for male children than for female children. (Ekman and Friesen, 1969, define display rules as socially learned prescribed procedures for managing affect displays in various social settings.) This is consistent with both the fact that male children encoded affective expressions significantly less accurately than female children and with the generally low encoding accuracy for male children. In addition, Kaplan and Sedney (1980) report that women display a full range of nonverbal expression of emotion spontaneously and that they reveal more about themselves in nonverbal as well as verbal channels compared to men.

While the literature on differential socialization of display rules is consistent with the finding that female children were significantly more accurate encoders than male children, the fact that the encoding accuracy of both sexes failed to depart significantly from chance expectation seems to reflect the generally less robust nature of the affect induction in this study as compared to the Feinman and Feldman study. It should be noted, however, that even in that study the encoding of only two out of a possible eight affect X sex of encoder combinations departed significantly from chance expectation; expressions of happi-

ness for boys encoded at higher than chance levels and expressions of anger for girls encoded at lower than chance levels.

## Type of Affect and Communication Accuracy

Type of affect, as predicted, was found to affect communication accuracy. This was true on both measures of communication accuracy. Results on each of these measures will be discussed separately below.

Categorization measure. The finding of differential decoder accuracy as a function of type of affect was predicted and replicates the prior study by Feinman and Feldman (1982). However, the pattern of decoding accuracy was somewhat unexpected. As in Feinman and Feldman, the decoding accuracy of observers for two of the four affects departed significantly from chance expectation. Expressions of anger were, as before, decoded with accuracy significantly below what would be expected by chance alone. However, expressions of happiness, which were decoded with accuracy significantly above chance expectation in the prior study, were decoded in the present study at no better than chance levels. Expressions of fear were decoded at no better than chance levels in both studies. Finally, in the present study, expressions of sadness were decoded most accurately

and at levels significantly above what would be expected by chance alone.

To summarize at this point, the results of the present study for type of affect present a number of similarities as well as two important differences from the prior study upon which this research was based. Once again, decoding accuracy was not great, in that only one of the four affects was decoded at levels significantly above chance expectation. Additionally, observers' accuracy in decoding expressions of anger was quite poor, producing results significantly below what one would expect by chance alone. However, departing from the pattern of the previous study, it was expressions of sadness, and not happiness, that produced observers' best decoding performance and this was quite unexpected. In addition, observers' accuracy in decoding the four affective expressions did not vary as a function of any other factor; there were no interactions with parental status, sex of observer, nor sex of encoder. (In the previous study the findings for decoding the four affective expressions were found to be moderated by whether or not the observer was a parent or a nonparent, as well as by sex of encoder.) In a sense then, the findings of the present study were more robust, because the effect of type of affective category on communication accuracy was not moderated by any other factor.

How do we then explain the pattern of decoding accuracy in the present study? The lower than chance decoding accuracy for three of the four affects might be expected if the affect induction were not at all effective. However, as noted above, two of the four affects studied did produce accuracy rates departing significantly from chance expectation, a finding not to be expected if the affect induction alone were responsible for deficits in decoding. Moreover, Masters, Barden, and Ford (1979) as well as other investigators (Bugental and Moore, 1979) found a similar affect induction valid and reliable.

That anger was decoded with least accuracy and below chance levels is not surprising and consistent with prior research. The literature now seems to suggest that children are capable of encoding expressions of anger with moderate reliability (Odom and Lemond, 1972) and that some improvement in encoding occurs with age (Mayo and LaFrance, 1978) but that adults have particular difficulty in decoding these expressions (Feinman and Feldman, 1982). The hypothesis that certain affects, perhaps those judged "less socially desirable" (Odom and Lemond, 1972), are subject to greater inhibition during socialization therefore seems to be reasonable with regard to expressions of anger.

This socialization hypothesis seems equally reasonable with regard to expressions of fear as well. Mayo and

LaFrance (1978) report that expressions of fear are not reliably produced even by children older than preschoolers and several studies now report that adults have difficulties decoding such expressions (Buck, 1975; Feinman and Feldman, 1982).

Alternatively, one explanation for the difficulty in decoding expressions of both anger and fear may be in the variability with which these affects can be experienced and expressed by children. The very event that might make one child angry could make another child sad (for instance, having a toy stolen). What one child might experience as quite fearful, another could experience as very pleasant or exciting (e.g., coming down a roller coaster). An event which might precipitate an experience of fear, might also cause a child some degree of sadness (e.g., being lost). In fact, this overlapping of affect may account for some of the decreased accuracy in decoding these affective categories (anger and fear) in the present study. An inspection of the self-generated thoughts reported by the children in this study suggests that some overlap may have occurred.

With regard to the hypothesis that socially difficult affects are subject to greater inhibition, the results of the present study introduce a note of complexity in two ways. First, happiness, a "positive" affect, was decoded with accuracy at no better than chance levels. Several studies

have reported no difficulties in children's encoding of this affect (Odom and Lemond, 1972; Buck, 1975; Mayo and LaFrance, 1978) nor in adults' decoding (Feinman and Feldman, 1982). One possible explanation for the relatively poor decoding of expressions of happiness in this study is that the children were not feeling happy. However, their ratings on the pleasantness scale suggest that they were feeling quite good and an inspection of their reported thoughts, self-generated during the affect induction, suggest that they were appropriate.

Why then is decoding accuracy for happiness not as good in the present study compared with the previous study? The answer may lie in the differing methods for inducing affects used in the two studies. In the prior research, children heard stories (and saw slides) about two quite pleasant experiences: winning a trip to Disneyland (probably not a very common event in the lives of most children) and having a birthday party (with the usual gathering of friends, presents, cake, etc.). In the current study, children were asked to generate their own thoughts, all pleasant, but perhaps not as pleasant as winning a trip or having a party. Perhaps this reduced the intensity of encoding and, therefore, decoding accuracy was somewhat lower. This explanation for reduced accuracy in decoding of positive affect would not affect the viability of the

socialization hypothesis with regard to negative affect.

Secondly, with regard to this hypothesis, sadness, an affect which might generally be thought of as "negative" and therefore perhaps "less socially desirable" was here found to be decoded with accuracy significantly above chance expectation. This would appear, at first glance, to be a rather incongruous finding. One possible explanation would involve a bias on the part of observers toward choosing the category of sadness when they could not otherwise decide which affect was "correct". An inspection of the error data suggests that such a bias might exist. Even so, such a bias would not necessarily be mutually exclusive with the hypothesis of socialized inhibition of displays of negative affect since, presumably, in order to discourage such displays, agents of socialization would first have to recognize these displays in order to be prepared to punish them or allow them to extinguish. However, the error data suggest that, were this the case, observers would inhibit displays of all affect (positive and negative) in this manner and give rise to much emotional confusion in children (a state of affairs that actually seems to exist to some extent in our culture given the number of programs and agencies whose mission seems to be to counteract such confusion).

With regard to the possibility of observer bias on the categorization measure, the data from the pleasantness

measure (to be discussed further below) may be interpreted in two ways. First, observers were most accurate (least discrepant with children's ratings) for expressions of sadness. Yet, no particular bias toward sadness could be said to exist on this measure as it only involved global ratings of feeling states. In this sense then, these data from the pleasantness measure tend to support the finding of a real sensitivity to decoding expressions of sadness rather than simply a bias toward always interpreting a difficult expression (difficult on the categorization task) as a sad one. On the other hand, it must be noted that although expressions of sadness produced the least discrepancy on the pleasantness measure, the difference scores for sadness were not significantly differentiated from those of fear and anger. It could be then that a different sort of bias exists on this measure: toward seeing most expressions, particularly those of the three "negative" affects, as pleasant.

In addition, with regard to the question of observer bias, analysis of the data of observers' ratings of the two stimulus children revealed that expressions of sadness were decoded with poor accuracy perhaps suggesting that observer bias alone (which conceivably would exist for observers in decoding all children) does not account for these results. Again, however, caution must be used in

interpreting the data obtained from ratings of the stimulus children because of the small sample size involved.

Finally, were it the case that socialization pressures account for either the inhibition of displays of "negative" affect and/or an observer bias toward "finding" expressions of sadness, one might expect parents (being the prime agents of socialization) to be more accurate (or biased) than nonparents. No such differences were found. The hypothesis that differential socialization of affect displays accounts for the pattern of decoding accuracy found in this research is therefore difficult to confirm or reject on the basis of this data.

Two other explanations may be viable in discussing the results with regard to decoding accuracy of the sadness category in this study and the study by Feinman and Feldman. The first again involves the differing nature of the affect inductions used and the finding of decreased accuracy for the decoding of happiness (as discussed above). The mean accuracy score (percent correct) for decoding sadness is actually about the same in both studies (37 percent, Feinman and Feldman, 1982; 42.7 percent in the present study). One way to look at the data is that only the pattern with regard to happiness and sadness has changed. In this sense then, the results for sadness may be about the same and observers are, therefore, only somewhat better at decoding sadness in the present study.

The other explanation again involves the different affect inductions but would also suggest a "real" difference in terms of decoding sadness. It is possible that the stories and slides used to induce sadness in the prior study (themes of a lost dog and social rejection) were not as effective as the children's self-generated thoughts; the children in the current study would then be feeling "more sad" and observers would then be correctly "reading" more sadness.

What would then be the meaning of observers' ability to decode accurately expressions of sadness? Assuming that the hypothesis of differential socialization of affect display rules is still tenable, could it be that sadness is not as "negative" or "socially undesireable" an emotion compared with anger and fear? Decoding errors attributing sadness to expressions of anger and fear might suggest that this were so as an attempt to "convert" an expression that was "difficult" into one "more acceptable". In a rather common sense way, one might say that adults would not want to see children sad and would be quite concerned when confronted with a sad child. Perhaps out of this concern for children, adults have developed greater capacity to empathize with (at least, initially) a sad child, and to engage him/her in some nurturing or protective experience. Adults would, therefore, increase their own self-esteem

(assuming the child feels better for their contact). Also, it might be said that sadness in a child does not involve a potentially attacking or rejecting component towards an adult as anger or fear might. In any case, it may be that these data are "telling us" that adults can be predisposed toward recognizing expressions of sadness in young children and that this could have an adaptive component with regard to adult-child relationships.

Pleasantness measure. As noted above, the data produced by observers' ratings on the pleasantness scale are not at all surprising for the sadness, anger, and fear categories of affect. Observers' ratings of expressions of sadness produced the least discrepancies on this measure followed by ratings of expressions of anger and fear (in that order). However, observers' ratings of happiness on the pleasantness scale were most discrepant with children's ratings in addition to being significantly differentiated from ratings of the other three categories. The pattern of the data in the present study virtually replicates the findings of Feinman (1980) on the pleasantness measure.

Why would happiness produce the greatest discrepancies? One possibility is that observers characteristically underestimate the pleasantness of children's emotional experiences. However, the most reasonable explanation involves considera-

tion of the manner in which the difference scores were derived.

Recall that the analysis of variance for the children's ratings on the happy-sad face scale of their emotional experiences while self-generating thoughts suggested that they indeed rated their experiences appropriately. The children's mean rating while thinking happy thoughts was 1.38 (with a rating of 1 being most pleasant and 5 being most unpleasant). Mean ratings for fear, sadness, and anger were 3.38, 3.63, and 3.75 respectively. Now consider that in producing the difference scores reported in Chapter III, observers' mean ratings ranged from 3.06 for happiness to 3.49 for sadness. Observers' ratings tended to cluster around the center of the five-point scale so that ratings of happiness video clips were in the same direction as the children's ratings, but not as extreme. For the other three affects, observers' ratings therefore more closely approximated the children's ratings while ratings of happiness (which the children had rated close to the extreme positive end of the scale) were most discrepant.

This explanation suggests that observers, in attempting this sort of global rating of children's emotional experiences, were unable to reasonably assess the children's experiences of positive affect. Perhaps this is because the task of rating experiences on this scale is just too

incongruous for observers when deprived of the specific nature of the affect-inducing context (the content of the self-generated thoughts, in this case). Their tendency would then be to "play it safe" by indicating ratings as close as possible to a neutral position in the center of the scale. Although Buck (1975, 1977) has consistently reported good results with this measure, Feinman (as noted above) and Morency and Krauss (1982) have reported similar disappointing results with spontaneous encoding of affect. Morency and Krauss hypothesized that these results were mostly attributable to the necessary restrictions on the unpleasantness of eliciting stimuli. The same may be true for the present study (though restrictions on eliciting stimuli were self-imposed by the children). In any case, in addition to whatever deficiencies may exist with respect to the range of eliciting stimuli, these results suggest that the scale itself may present observers with problems of interpretation too difficult to resolve successfully when trying to estimate children's expressions of specific affects.

## Effects of Sex of Observer

Previous studies had either not tested for differences between men and women in accuracy of decoding the affective

expressions of children (Buck, 1975, 1977; Feinman and Feldman, 1982), found adult females to be better decoders of nonverbal expressions generally compared to men (Hall, 1978), found mothers to be more accurate than fathers (Zuckerman and Przewuzman, 1979), or found no differences between mothers and fathers (Morency and Krauss, 1982).

In the present study, differences between mothers and fathers in decoding accuracy were not found in the data analysis. Results of the present study therefore tend to support the position that sex differences in decoding accuracy are not great. If these findings were valid, the popular stereotype of women being more attuned to nonverbal expressions generally, and expressions of emotion in particular, would be in some jeopardy. In fact, Kaplan and Sedney (1980), in discussing the issue of sex differences in empathic responding, report that "when empathy is defined as recognition of feeling in another, consistent sex differences have not been established". They suggest that both sexes may be equally likely to be accurate in assessing what another person is feeling. They believe, however, that females are more likely than males to accompany their assessment of feeling by emotional arousal similar to the subject of their empathy. In any case, the finding of no sex difference in decoding accuracy seems supported by this line of reasoning.

Alternatively, it is possible that due to the generally low level of decoding accuracy, any real, though perhaps small, differences between males and females in decoding accuracy, and mothers and fathers in particular, were relatively hidden. No particular trends toward decoding differences were seen in the data however; that is, on both measures of communication accuracy, the sex of observer factor did not even approach significance (see Tables 1 and 6).

It is also possible that this sample of fathers, in particular, was more involved in child rearing than might otherwise be expected, thus perhaps sharing responsibility for children with mothers more than might parents in the general population. If this were so, one would expect them to be more cognizant of their children's emotional expressions than they might otherwise be; perhaps equally cognizant as their spouses. This might reflect a changing pattern of values with respect to family involvement of both parents in our culture as well as fathers' increasing recognition of the importance of their role in child development. In a well-educated and well-employed sample, time for family involvement may be more available or more a priority for fathers as well. It should be noted, however, that no differences in decoding accuracy emerged between the men and women in the control group either , thus perhaps

reducing the liklihood of the previous argument. However, it may be that the generally low level of decoding accuracy affects the control group more heavily than the parents in masking sex differences.

In any case, a measure of family involvement for both parents would have been helpful in sorting out the possible reasons for a failure to find differences between mothers and fathers and might be included in future research.

## Parents' Accuracy with Their Own vs. Other Children

The finding of no general difference between parents' accuracy in decoding the expressions of their own children compared with those of other, unrelated children was again unexpected and surprising given the long history of interaction parents have with their own children. The stimulus children were selected at random and observers were shown video clips of only one stimulus child in addition to the parents' child, a procedure employed in order to standardize the presentation of the stimulus child across all observers. However, this methodology may have introduced some complexity in interpreting the results as it may be that the stimulus children selected were not equivalent (to each other nor the parents' children) in encoding skills. It is difficult to know how

much weight can be given to these findings since they have been obtained from such a small, and therefore potentially biased (in encoding skills), sample of stimulus children.

Nevertheless, one way to look at these data might be to suggest that parenting, in general, accounts for decoding ability (however minimal) and that, therefore, differences between parents' decoding of related and unrelated children are nonsignificant. However, the finding (reported above) that parents did no better than nonparents at decoding the expressions of stimulus children suggests that no general parenting factor contributes to nonverbal decoding ability (contrary to the findings of Hall, Rosenthal, Archer, DiMatteo, and Rogers, 1977).

That parents should be more accurate at decoding expressions of sadness in their own children but less accurate at decoding expressions of happiness in their own children compared to other (especially female) children would be of some interest perhaps suggesting that it is more critical for parents to recognize sad expressions in their children calling for parental action of some sort (whereas happiness might not call for the same degree of involvement). However, again the stimulus children (particularly the female stimulus child) and their particular encoding abilities may account for most

of the differences observed leaving it to future research to replicate these findings before they can be discussed with any seriousness.

## Conclusions and Implications for Future Research

Unfortunately, what can be concluded positively from this and prior research at this time is little, compared to what these and prior results have left unresolved. The present study was originally conceived, in part, as an attempt to replicate and validate the findings of Feinman and Feldman (1982) with regard to parental decoding of children's nonverbal expressions of affect. Few of these results were replicated, though the results of the present research do tend to fit well with several other studies. In addition, it was hoped that the present research would add to our understanding of the manner in which adults, particularly parents, might use nonverbal decoding abilities to be empathic with children. As will be discussed further below, the implications of these results are not heartening with regard to this issue.

On balance, the present research, along with several other studies, seems to suggest that there are differences along gender lines in the facility with which children

can be read nonverbally by adults in communicating about emotional experiences. That girls can be read more accurately than boys is hardly surprising. Whether the locus of the source of these differences is in the children's encoding or the adults' decoding, or both, is unclear. If the source is in the children's encoding, whether socialized display rules inhibit encoding in boys or promote encoding in girls, or both, is likewise unclear. If the source of the difference is in adults' decoding, it is unclear how adults would come to differentially attend to, and learn about, girls' and boys' affective displays. Further study of these mechanisms, therefore, seems needed.

It can now also be safely concluded that the decoding accuracy of adults depends to a large extent on the type of affect being communicated. It appears from the present study that children's expressions of sadness can be decoded by adults with greatest accuracy. But due to some questions about the affect induction employed as compared with that in the previous study by Feinman and Feldman and the finding in that study that happiness was decoded best, there may still be some degree of confidence about adults' abilities to decode positive affect with good reliability. (In fact, it seems most reasonable to conclude that expressions of

sadness and happiness are likely to be decoded well by adults.) What is also clear, however, is that spontaneously produced expressions of anger may be exceedingly difficult for children to communicate nonverbally to adults (at least at the levels at which children begin to think angry thoughts). Although, again, we cannot be sure about the precise locus of the problem in communication, it does seem reasonable to conclude that adults' decoding deficits are at least partially responsible for this difficulty. The consequences of these deficits for empathic responding to children seem more important for parents than nonparents especially if parents are to help their children acknowledge, accept, and understand these emotions as normal rather than deny, distort, or displace these feelings. The recent emphasis in our culture on parent skills programs, therefore, seems quite warranted.

Little certainty exists in the literature at present with regard to the remaining hypotheses under investigation here; that mothers would be better decoders than fathers, that parents would be better decoders of their own compared with other children, and most importantly, that parents would be more accurate decoders of their children's expressions of emotion than nonparents. The latter question seems especially important if the gen-

erally low levels of decoding accuracy reported here are representative, at all, of real decoding skills. The present study leaves these questions open for the reasons cited above.

If parents are not reliable decoders of their children's nonverbal expressions of emotion, then how do they go about understanding their children's affects and attempt to respond with empathy? If, in fact, a perceiver bias exists for parents (and other adults) in decoding children's expressions of emotion, what is the source of this bias? Deprived of any particular situational cues (as they were in this study), parents would most reasonably rely on their own unique histories in making judgments about children's feelings. One critical element in their histories might be their own unresolved, and unresponded to, feelings from parent-child interactions in their own childhood experiences. These unresolved affective experiences would then serve as "guideposts" (Stierlin, 1970), both in resolving ambiguous perceptual situations (by attributing the primary affect from the childhood situation of the parents to the present situation with their child) as well as seeking some degree of resolution in a current affect-laden relationship (the parent-child relationship). This explanation has, in fact, been proposed generally

as a way of understanding parent-child communications difficulties in a clinical context by psychoanalytically-oriented object-relations theorists (Fairbairn, 1952; Ornstein, 1976). Were this to be the case, whatever programs existed to help parents learn about, and interpret, their children's emotional experiences, ought to attend as well to the parents' experiences in their own childhood.

Several areas for further inquiry and investigation can be suggested at this point. In order to ensure the generalizability of results and to test for the impact of educational and occupational factors on parental vs. nonparental decoding abilities, future sampling would do well to ensure adequate representation of "working class" parents as well as middle class parents. Some effort to include subjects with varying degrees of reliance on verbal abilities would also be helpful.

An anxiety measure might also be used with adult decoders to learn more about potential parental vs. nonparental abilities. An anxiety factor might then be included in the data analysis to determine first, if parents are more anxious than nonparents, and second, if their anxiety level does inhibit decoding accuracy in the experimental situation.

One complicating factor in interpreting the results

of studies of nonverbal communication accuracy is the inherently confounding issue of differentiating between encoding accuracy and decoding accuracy. Encoding and decoding accuracy may be talked about as if they were separate communication skills, but in fact, they always represent two sides of a mutually dependent communication process. It is, therefore, always difficult to know precisely the locus of a nonverbal communication problem and there appears, at present, to be little methodological resolution possible on this issue.

Nevertheless, since the question of observers' perception biases has been raised as a complicating factor in interpreting the results of the present study, some attention should be given to controlling for such biases. A sample of "good encoders" might be selected (by using some larger group of decoders to agree on a reasonable sample of children with more easily read expressions) and observers might then be asked to rate these encoders as well as the remaining subject children. Presumably, if observer biases existed, they would appear in observers' ratings of these "good encoders" as well. This would allow some resolution of the problem of observer perception bias as a confounding factor in these results.

The impact of the differing nature of the encoding

paradigms and affect inductions in the Feinman and Feldman study and the present study has been mentioned previously. A test of the two affect inductions on decoder accuracy, therefore, seems called for as well.

The finding of no difference in decoding accuracy between fathers and mothers might be clarified by the gathering of data on the level of involvement of each of the parents in child rearing on a day-to-day basis. A family involvement measure might be devised either in the form of an interview or a more objective device.

To adequately test parents' abilities with their own compared to other children, a larger group of stimulus children should be employed to reduce the confounding potential of the particular encoding characteristics of the stimulus children selected.

Finally, the pleasantness measure has been found to be essentially nonproductive as a second measure of communication accuracy in both studies of the communication of specific affective messages (the present one and Feinman, 1980). Perhaps this measure should be abandoned at this point and some alternative measure investigated.

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# APPENDIX A

## Text of Letter Used to Recruit Subjects

I'm writing to ask your help in a research project I'm conducting in the Psychology Department at the University of Massachusetts at Amherst. This project should increase our understanding of the way in which children communicate how they feel to their parents and other adults by looking at how children communicate emotions nonverbally.

Parents and their 4 - 6 year old children are being asked to participate in this study. If you agree to participate, an appointment will be made, at your convenience, for you and your child to come to the university for one session lasting approximately 15 minutes. During this session, your child will be asked to focus on a few of his or her own thoughts about common events in childhood that might make him or her feel various emotions. You will observe your child's facial expressions and be asked to guess the general nature of the situation your child is thinking about based on his or her nonverbal facial expressions alone.

At the conclusion of the session, you will receive

immediate feedback about your guesses and a written description of the research program. At the conclusion of the entire study, you will receive a complete summary of the results and the implications of these results for the communication process between parents and children generally.

I will be able to provide you with Ten Dollars as an honorarium in appreciation of your time and to offset your transportation costs.

The parents and children who participated in a prior research project of this kind found the study to be interesting and informative. If you are interested, please contact me so that we may set up an appointment. Thank you for your help and consideration.

## APPENDIX B

### Demographic Data on Subject Children and Matched Parent and Nonparent Sets

| Set | Sex of Child | Age of Child | Age of Adult | SES | Education/Occuapation | Birth Order | Years of Experience with 4-6 Year-old Children |
|---|---|---|---|---|---|---|---|
| 1 | female | 5-10 | | | | | |
| pf: | | | 32 | II | B.A.(Child Development)/ Antique Dealer | 3/3 | 6 |
| pm: | | | 35 | II | Ph.D.(Entomology)/ Antique Dealer | 1/1 | 5 |
| npf: | | | 27 | III | BA(Counseling & Education)/ Waitress & Part-time babysitter | 1/3 | 2-3 |
| npm: | | | 31 | II | MA(Art & Business)/ Salesman | 1/2 | 4 |
| 2 | female | 4-9 | | | | | |
| pf: | | | 34 | III | MS(Criminal Justice)/ Counselor | 3/3 | 9 |
| pm | | | 33 | III | MS(Math)/Graduate Student | 2/7 | 6 |
| npf: | | | 29 | III | MS(Psychology)/Clinical Graduate Student | 1/3 | 10 |
| npm: | | | 24 | III | MA(American Civilization)/ Graduate Student | 2/3 | 3 |
| 3 | female | 6-5 | | | | | |
| pf | | | 33 | II | M.Ed.(Counseling)/Counselor | 3/4 | 10 |

pf = parent female  pm = parent male  npf = nonparent female  npm = nonparent male

APPENDIX B(CONTINUED)

| Set | Sex of Child | Age of Child | Age of Adult | SES | Education/Occupation | Birth Order | Years of Experience with 4-6 Year-old Children |
|---|---|---|---|---|---|---|---|
| pm: | | | 35 | II | Ph.D(Psychology)/Professor | 1/2 | 10 |
| npf: | | | 30 | II | MS(Psychology)/Clinical Graduate Student | 1/2 | 2 |
| npm: | | | 32 | II | Ph.D.(Psychology)/Professor | 1/3 | 3 |
| 4 | female | 6-4 | | | | | |
| pf: | | | 41 | II | Ph.D.(History of Science)/ College Teacher and Administrator | 3/3 | 4 |
| pm | | | 42 | II | MS(Psychiatric Nursing)/ Psychiatric Nurse | 2/2 | 4 |
| npf: | | | 38 | II | Ph.D.(French)/Professor | 2/4 | 1 |
| npm: | | | 32 | II | MSW/Clinical Social Worker | 2/3 | 0 |
| 5 | female | 4-0 | | | | | |
| pf: | | | 35 | II | M.Ed.(Counseling)/Counselor | 4/4 | 6 |
| pm: | | | 37 | II | Ed.D(Counseling)/Therapist | 2/3 | 12 |
| npf: | | | 30 | II | MPH/Counselor | 3/5 | 4 |
| npm: | | | 33 | II | Ph.D.(Psychology)/Psychologist | 3/3 | 10 |

APPENDIX B (CONTINUED)

| Set | Sex of Child | Age of Child | Age of Adult | SES | Education/Occupation | Birth Order | Years of Experience with 4-6 year old children |
|---|---|---|---|---|---|---|---|
| 6 | male | 5-2 | | | | | |
| pf: | | | 33 | II | MA/Church Secretary | 1/2 | 7 |
| pm: | | | 38 | II | MA(Music)/College Teacher and Singer | 2/2 | 5 |
| npf: | | | 28 | III | MA(French)/Graduate Student | 1/3 | 5 |
| npm: | | | 34 | II | Ph.D.(Art History)/Professor | 2/3 | 0 |
| 7 | female | 6-4 | | | | | |
| pf: | | | 43 | II | BS(Education)/Pre-school teacher | 1/1 | 10 |
| pm: | | | 48 | II | MS(Library Science)/Librarian | 1/2 | 5 |
| npf: | | | 30 | III | M.Ed.(Education)/Elementary Spec. Ed. Teacher | 3/4 | 8 |
| npm: | | | 36 | III | BA(Education)/Book Shop Owner | 1/2 | 4 |
| 8 | male | 5-1 | | | | | |
| pf: | | | 33 | III | BA(Education)/Pre-school teacher | 2/2 | 8 |
| pm: | | | 32 | III | MA(Education)/Teacher (4th grade) | 3/6 | 10 |
| npf: | | | 25 | III | AB(Education)/Pre-school teacher | 4/4 | 5 |
| npm: | | | 29 | III | MA(Math)/Graduate Student (Economics) | 3/4 | 6 |

APPENDIX B(CONTINUED)

| Set | Sex of Child | Age of Child | Age of Adult | SES | Education/Occupation | Birth Order | Years of Experience with 4-6 Year old Children |
|---|---|---|---|---|---|---|---|
| 9 | female | 4-6 | | | | | |
| pf: | | | 32 | II | BA(Human Relations)/Housewife | 4/6 | 5 |
| pm: | | | 35 | II | MBA/Marketing | 2/2 | 3 |
| npf: | | | 28 | III | BA(Health and Physical Education)/Waitress | 3/5 | 5 |
| npm: | | | 31 | III | BA(Education)/Teacher | 3/4 | 1 |
| 10 | male | 4-11 | | | | | |
| pf: | | | 34 | III | 3 years of college/Housewife | 1/5 | 3 |
| pm: | | | 36 | III | MSW/Caseworker | 4/4 | 3 |
| npf: | | | 29 | IV | 3 Years of college/Student | 1/5 | 3 |
| npm: | | | 31 | III | BA(Psychology)/Journalist | 1/3 | 0 |
| 11 | female | 5-7 | | | | | |
| pf: | | | 32 | III | BA(English)/Teacher(P/T) | 3/3 | 3 |
| pm: | | | 32 | III | BA(Law Enforcement)/Police Officer | 1/8 | 3 |
| npf: | | | 28 | III | MA(English Literature)/ Graduate Student | 5/6 | 6 |
| npm: | | | 31 | III | BA(Biology)/Teacher(JHS) | 3/3 | 1 |

APPENDIX B(CONTINUED)

| Set | Sex of Child | Age of Child | Age of Adult | SES | Education/Occupation | Birth Order | Years of Experience with 4-6 Year Old Children |
|---|---|---|---|---|---|---|---|
| 12 | female | 6-4 | | | | | |
| pf: | | | 32 | II | M.Ed.(Elementary Ed.)/ Special Ed. Teacher | 1/3 | 6 |
| pm: | | | 34 | II | Ph.D.(Biostatistics) Professor | 1/3 | 3 |
| npf: | | | 35 | III | RN,NP/Pediatric Nurse Practitioner | 2/4 | 10 |
| npm: | | | 35 | II | Ph.D.(Psychology)/Professor | 2/3 | 1 |
| 13 | female | 5-0 | | | | | |
| pf: | | | 39 | II | Ph.D.(Russian)/Professor | 1/1 | 7 |
| pm: | | | 40 | II | Ph.D.(Political Science)/ Professor | 1/2 | 5 |
| npf: | | | 30 | II | Ph.D.(Art History)/Professor | 3/3 | 0 |
| npm: | | | 36 | II | Ph.D.(Educational Evaluation) Administrator | 1/4 | 1 |
| 14 | male | 4-0 | | | | | |
| pf: | | | 34 | II | MSW/Social Worker | 1/2 | 5 |
| pm: | | | 35 | II | MD/Psychiatrist | 1/2 | 3 |
| npf: | | | 29 | III | MSW/Social Worker | 2/2 | 0 |
| npm: | | | 38 | II | Ph.D./Psychologist | 1/3 | 1 |

APPENDIX B(CONTINUED)

| Set | Sex of Child | Age of Child | Age of Adult | SES | Education/Occupation | Birth Order | Years of Experience with 4-6 Year Old Children |
|---|---|---|---|---|---|---|---|
| 15 | female | 4-2 | | | | | |
| pf: | | | 34 | III | MA(English)/Housewife | 2/2 | 3 |
| pm: | | | 33 | III | MS(Computer Science)/ Graduate Student | 1/3 | 3 |
| npf: | | | 31 | III | MA(English)/Graduate Student | 1/2 | 0 |
| npm: | | | 31 | III | BA & BS(Physics)/Research Associate | 1/2 | 0 |
| 16 | male | 4-6 | | | | | |
| pf: | | | 34 | II | BA & Teaching Credential/ Housewife | 2/3 | 3 |
| pm: | | | 39 | II | Ph.D.(Excercise Science) Professor | 1/3 | 3 |
| npf: | | | 28 | III | 3 yrs. of college(Psychology) Student | 2/2 | 2 |
| npm: | | | 33 | III | MS(Psychology)/Graduate Student | 1/3 | 2 |
| 17 | female | 5-2 | | | | | |
| pf: | | | 41 | II | BA(English)/Insurance Agent | 1/1 | 3 |
| pm: | | | 52 | II | BA(Political Science)/Editor | 3/3 | 4 |
| npf: | | | 33 | III | MA(English)/Graduate Student | 2/3 | 3 |
| npm: | | | 32 | II | BA(English)/Writer | 2/2 | 1 |

APPENDIX B(CONTINUED)

| Set | Sex of Child | Age of Child | Age of Adult | SES | Education/Occupation | Birth Order | Years of Experience with 4-6 Year Old Children |
|---|---|---|---|---|---|---|---|
| 18 | male | 5-7 | | | | | |
| pf: | | | 34 | III | BA(English Literature)/Editor | 2/3 | 10 |
| pm: | | | 34 | III | MA(Psychology)/Graduate Student | 2/2 | 4 |
| npf: | | | 35 | II | Ph.D.(English)/Publicist-Editor | 1/4 | 1 |
| npm: | | | 32 | III | MS(Psychology)/Graduate Student | 1/2 | 8 |
| 19 | male | 5-3 | | | | | |
| pf: | | | 36 | II | BA(Political Science)/Lab Technician | 3/3 | 5 |
| pm: | | | 36 | II | DMD/Dentist | 2/2 | 3 |
| npf: | | | 39 | II | AAS/Dental Assistant | 2/2 | 1 |
| npm: | | | 35 | II | DMD/Dentist | 2/2 | 2 |
| 20 | male | 6-1 | | | | | |
| pf: | | | 38 | II | Ph.D.(English)/Professor and Counselor | 3/3 | 3 |
| pm: | | | 38 | II | Ph.D.(English)/Fund Raiser | 2/2 | 2 |
| npf: | | | 34 | II | Ph.D.(Psychology)/Psychologist | 1/5 | 7 |
| npm: | | | 34 | II | MD/Physician | 1/3 | 8 |

APPENDIX B(CONTINUED)

| Set | Sex of Child | Age of Child | Age of Adult | SES | Education/Occupation | Birth Order | Years of Experience with 4-6 Year Old Children |
|---|---|---|---|---|---|---|---|
| 21 | male | 6-11 | | | | | |
| pf: | | | 35 | III | BA(English)/Medical Records Clerk | 2/9 | 10 |
| pm: | | | 35 | III | BA(Math)/Educational Products Designer | 2/8 | 10 |
| npf: | | | 30 | III | BA(Human Development)/ Secretary | 5/5 | 4 |
| npm: | | | 32 | III | MA(English)/Graduate Student | 1/2 | 0 |
| 22 | male | 4-6 | | | | | |
| pf: | | | 34 | II | M.Ed./Housewife and p/t teacher | 1/2 | 2 |
| pm: | | | 35 | II | MS/Veterinarian | 1/4 | 0 |
| npf: | | | 31 | II | MA(Geology)/Geologist | 3/3 | 1 |
| npm: | | | 30 | III | MS(Psychology)/Graduate Student | 2/3 | 1 |
| 23 | male | 6-7 | | | | | |
| pf: | | | 37 | II | MS(Counseling)/Therapist | 1/3 | 7 |
| pm: | | | 39 | II | Ed.D.(Counseling)/ Psychologist | 2/6 | 8 |
| npf: | | | 30 | II | M.Ed.(Counseling)/ Therapist | 1/5 | 15 |
| npm: | | | 34 | II | Ph.D.(Psychology)/ Psychologist | 1/7 | 10 |

APPENDIX B(CONTINUED)

| Set | Sex of Child | Age of Child | Age of Adult | SES | Education/Occupation | Birth Order | Years of Experience with 4-6 Year Old Children |
|---|---|---|---|---|---|---|---|
| 24 | male | 6-6 | | | | | |
| pf: | | | 37 | III | M.Ed.(Guidance)/Housewife and School Counselor | 4/5 | 7 |
| pm: | | | 38 | III | 3 Years of College (Political Science)/ Retired Navy Officer & Student | 3/3 | 3 |
| npf: | | | 33 | II | M.Ed.(Counseling)/ Counselor | 3/3 | 2 |
| npm: | | | 34 | III | 3 Years of College (Psychology)/ Bookkeeper | 1/1 | 1 |

APPENDIX B(CONTINUED)

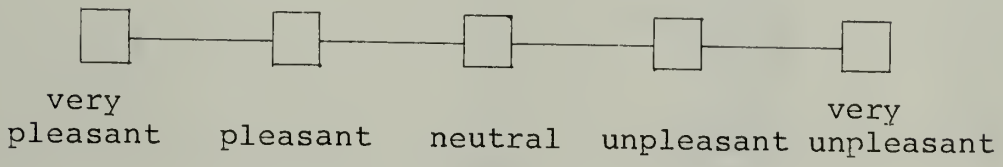
| Mean Ages: Children | | Mean Ages: Adults | | Mean Years of Experience With 4-6 Year Old Children | |
|---|---|---|---|---|---|
| Male | 5.4 | Mothers | 35.3 | Mothers | 5.9 |
| Female | 5.4 | Fathers | 37.1 | Fathers | 4.9 |
| | | Parents | 36.2 | Parents | 5.4 |
| | | NPF | 30.8 | NPF | 4.1 |
| | | NPM | 32.5 | NPM | 2.8 |
| | | Nonparents | 31.7 | Nonparents | 3.5 |

| | Mothers | Fathers | (Parents) | NPF | NPM | (Nonparents) | Total |
|---|---|---|---|---|---|---|---|
| I | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| II | 67 | 67 | 67 | 42 | 50 | 46 | 56 |
| III | 33 | 33 | 33 | 54 | 50 | 52 | 43 |
| IV | 0 | 0 | 0 | 4 | 0 | 2 | 1 |
| V | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# APPENDIX C

## Rating Form Used by Observers

| Happi-ness | Fear | Anger | Sadness |
|---|---|---|---|
| | | | |



# APPENDIX D

## Analysis of Variance for Categorization Measure: Parents' and Nonparents' Observations of Stimulus Children

| Source | df | MS | F |
|---|---|---|---|
| Between S | | | |
| Type of Observer (A) | 1 | 337.50 | 0.39 |
| Sex of Observer (B) | 1 | 337.50 | 0.39 |
| Sex of Encoder (C) | 1 | 3375.00 | 38.90* |
| A X B | 1 | 21.09 | 0.02 |
| A X C | 1 | 21.09 | 0.02 |
| B X C | 1 | 189.84 | 0.22 |
| A X B X C | 1 | 337.50 | 0.39 |
| Error | 88 | 867.72 | |
| Within S | | | |
| Type of Affect (D) | 3 | 6658.59 | 8.56* |
| A X D | 3 | 478.13 | 0.61 |
| B X D | 3 | 140.63 | 0.18 |
| C X D | 3 | 19209.38 | 24.68* |
| A X B X D | 3 | 189.84 | 0.24 |
| A X C X D | 3 | 77.34 | 0.10 |
| B X C X D | 3 | 696.09 | 0.89 |
| A X B X C X D | 3 | 928.13 | 1.19 |
| Error | 264 | 778.23 | |

*$p < .0001$

# APPENDIX E

## Analysis of Variance for Pleasantness Measure: Parents' and Nonparents' Observations of Stimulus Children

| Source | df | MS | F |
|---|---|---|---|
| Between S | | | |
| Type of Observer (A) | 1 | 0.75 | 0.48 |
| Sex of Observer (B) | 1 | 0.13 | 0.08 |
| Sex of Encoder (C) | 1 | 153.77 | 97.31* |
| A X B | 1 | 4.38 | 2.77 |
| A X C | 1 | 0.00 | 0.00 |
| B X C | 1 | 1.38 | 0.87 |
| A X B X C | 1 | 0.75 | 0.48 |
| Error | 88 | 1.58 | |
| Within S | | | |
| Type of Affect (D) | 3 | 134.63 | 78.69* |
| A X D | 3 | 1.72 | 1.00 |
| B X D | 3 | 1.04 | 0.61 |
| C X D | 3 | 48.78 | 28.51* |
| A X B X D | 3 | 2.76 | 1.61 |
| A X C X D | 3 | 3.59 | 2.10 |
| B X C X D | 3 | 2.52 | 1.47 |
| A X B X C X D | 3 | 2.15 | 1.26 |
| Error | 264 | 1.71 | |

*$p < .0001$